

slide lock mechanism 60 of the first embodiment, the pivot lock mechanism 110 may optionally be protected by a dust cover 113 from the outside environment.

IN THE CLAIMS:

1. (Twice Amended) A circular saw comprising:
a table having an upper surface for placing a workpiece thereon;
a saw unit having a saw blade mounted thereon;
means for supporting said saw unit on said table, said supporting means enabling [such that] said saw unit [is adapted] to move in a horizontal direction parallel to said upper surface of said table and [is adapted] to move in a vertical direction relative to said upper surface of said table; and
at least one of first lock means and second lock means, wherein said first lock means [is [adapted to] automatically [prevent] prevents said saw unit from moving in the horizontal direction upon detection by a first sensor means of movement of said saw unit in the vertical direction [by a first sensor means], and the second lock means [is adapted to] automatically [prevent the] prevents said saw unit from moving in the vertical direction upon detection by a second sensor means of movement of said saw unit in the horizontal direction

[by a second sensor means].

2. (Thrice Amended) The circular saw as defined in claim 1 wherein the circular saw includes the first lock means and said first lock means comprises a fixing member for fixing said saw unit in position relative to said table in the horizontal direction and an actuator for selectively operating said fixing member.

3. (Thrice Amended) The circular saw as defined in claim 2 wherein:

said support means includes a support arm mounted on said table, a slide member horizontally slidably relative to said support arm, and hinge means for vertically pivotally connecting said saw unit to said slide member; and

wherein said fixing member [selectably] fixes said slide member in position relative to said support arm[, and] when said first sensor means detects [the] vertical pivotal movement of said saw unit relative to said slide member.

4. (Twice Amended) The circular saw as defined in claim 3 wherein:

said slide member comprises a slide shaft slidably inserted into a holder provided on said support arm;

said fixing member comprises a screw inserted into a

threaded hole formed in said holder in a direction perpendicular to [an axial direction] a longitudinal axis of said slide shaft, said screw having one end arranged and constructed to abut [abutting] said slide shaft; and

wherein said actuator [rotating] rotates said screw in both clockwise and counterclockwise directions so as to move said screw toward and away from said slide shaft.

5. (Amended) The circular saw as defined in claim 4 further including a dust cover mounted on said holder, said dust cover [for] protecting said actuator and said screw from the outside environment.

6. (Thrice Amended) The circular saw as defined in claim 4 wherein:

 said first sensor means comprises a detector plate mounted on one of said slide shaft or said saw unit, and an optical sensor mounted on the other of said slide shaft and said saw unit;

 said detector plate having a plurality of parallel identification bars marked thereon, and said parallel bars being spaced from each other by a predetermined distance; and

wherein said optical sensor [detecting] detects movement of said parallel identification bars as a change in a reflected light pattern.

7. (Thrice Amended) The circular saw as defined in claim 1 wherein the circular saw includes the second lock means and said second lock means comprises a fixing member for fixing said saw unit in position relative to said table in the vertical direction[,] and an actuator for selectively operating said fixing member[, and] second sensor means for detecting the horizontal movement of said saw unit].

8. (Thrice Amended) The circular saw as defined in claim 7 wherein:

said support means includes a support arm mounted on said table, a slide member horizontally slidable relative to said support arm, and hinge means for vertically pivotally connecting said saw unit to said slide member; and

wherein said fixing member [of said second lock means selectively] fixes the pivotal position of said saw unit relative to said slide member[, and] when said second sensor means detects [the] horizontal [slide] sliding movement of said slide member relative to said support arm.

9. (Twice Amended) The circular saw as defined in claim 8 wherein:

said slide member comprises a slide shaft slidably inserted into a holder provided on said support arm;

said fixing member comprises a screw engaged with a

threaded hole formed in said saw unit in a direction parallel to the pivotal axis of said saw unit;

said slide shaft having a flange portion that includes an abutting surface extending within a plane perpendicular to the pivotal axis of said saw unit[, so that] and one end of said screw [abuts] is arranged and constructed to abut said abutting surface of said flange portion; and

wherein said actuator [rotating] rotates said screw in both clockwise and counterclockwise directions so as to move said screw toward and away from said abutting surface.

10. (Amended) The circular saw as defined in claim 9 further including a dust cover mounted on said saw unit, said dust cover [for] protecting said actuator and said screw from the outside environment.

11. (Thrice Amended) The circular saw as defined in claim 9 wherein:

said sensor means includes a plurality of parallel identification bars marked on said slide shaft and [includes] an optical sensor provided on said holder;

said parallel bars being spaced from each other by a predetermined distance [in] along a longitudinal [direction] axis of said slide shaft; and

wherein said optical sensor detects movement of said

parallel identification bars as a change in a reflected light pattern.

12. (Reiterated) The circular saw as defined in claim 1 wherein the circular saw includes both said first lock means and second lock means.

13. (Thrice Amended) The circular saw as defined in claim 12 wherein:

said first lock means includes a first fixing member for fixing said saw unit in position relative to said table in the horizontal direction and a first actuator coupled to the first fixing member, said first actuator selectively moving said first fixing member between a locked position and an unlocked position; and

said second lock means includes a second fixing member for fixing said saw unit in position relative to said table in the vertical direction and a second actuator coupled to the second fixing member, said second actuator selectively moving said second fixing member between a locked position and an unlocked position.

14. (Thrice Amended) The circular saw as defined in claim 13 wherein:

said support means includes a support arm mounted on said

table and a slide shaft coupled to the support arm, wherein the slide shaft [slides] is arranged and constructed to slide horizontally relative to said support arm, and a hinge means coupling the slide shaft to the saw unit, wherein said saw unit can pivot [the slide shaft pivots] vertically relative to said [saw unit] slide shaft;

wherein said first fixing member [of said first lock means selectively] fixing said slide shaft in position relative to said support arm[, and] when said first sensor means [detecting] detects vertical pivotal movement of said saw unit relative to said slide shaft; and

wherein said second fixing member [of said second lock means selectively fixing] fixes the pivotal position of said saw unit relative to said slide shaft[, and] when said second sensor means [detecting] detects horizontal movement of said saw unit relative to said support arm.

15. (Four Times Amended) The circular saw as defined in claim 14 wherein:

 said slide shaft is slidably received in a holder provided on said support arm;

 said first fixing member comprises a first screw inserted into a first threaded hole formed in said holder in a direction perpendicular to [an axial direction] a longitudinal axis of said slide shaft, [said first screw having one end for

abutting] one end of said first screw being arranged and constructed to abut said slide shaft;

wherein said first actuator [rotating] rotates said first screw in both clockwise and counterclockwise directions so as to move said first screw toward and away from said slide shaft;

said second fixing member comprises a second screw inserted into a second threaded hole formed in said saw unit in a direction parallel to the pivotal axis of said saw unit;

and wherein the circular saw further comprises a flange portion having an abutting surface extending within a plane perpendicular to the pivotal axis of said saw unit, [and is disposed such that] one end of said second screw being arranged and constructed to abut [selectively abuts] said abutting surface of said flange portion; and

wherein said second actuator [rotating] rotates said second screw in both clockwise and counterclockwise directions so as to move said second screw toward and away from said abutting surface.

16. (Amended) The circular saw as defined in claim 15 further including a first dust cover and a second dust cover, said first dust cover being mounted on said holder, said first dust cover [for] protecting said first actuator and said first screw from the outside environment, and said second dust cover

being mounted on said saw unit, said second dust cover [for] protecting said second actuator and said second screw from the outside environment.

17. (Thrice Amended) The circular saw as defined in claim 15 wherein:

 said first sensor means comprises a detector plate mounted on one of said slide shaft or said saw unit, and a first optical sensor mounted on the other of said slide shaft and said saw unit;

 said detector plate having a plurality of first parallel identification bars marked thereon, [and] said first parallel identification bars being spaced from each other by a predetermined distance;

wherein said first optical sensor [detecting] detects movement of said first parallel identification bars as a change in a reflected light pattern;

 said second sensor means comprises a plurality of second parallel identification bars marked on said slide shaft and [includes] a second optical sensor provided on said holder;

 said second parallel identification bars being spaced from each other by a predetermined distance [in a] along the longitudinal [direction] axis of said slide shaft; and

wherein said second optical sensor [detecting] detects movement of said second parallel identification bars as a

change in a reflected light pattern.

18. (Thrice Amended) An apparatus comprising:
a table,

a saw [blade] unit coupled to the table[, the] and
comprising a saw blade [being] that is movable at least in a
horizontal direction relative to the table and a vertical
direction relative to the table and

at least one lock coupled to and disposed between the saw
unit and the table, the at least one lock selected from the
group consisting of a first lock and a second lock, wherein:

the first lock is operationally coupled to [the table and
the saw blade] a first sensor, wherein the first lock
automatically prevents the saw blade from moving in the
horizontal direction relative to the table when [a] the first
sensor detects the saw blade moving in the vertical direction
and automatically permits the saw blade to move in the
horizontal direction after the first sensor detects the saw
blade has stopped moving in the vertical direction and

the second lock is operationally coupled to [the table
and the saw blade] a second sensor, wherein the second lock
automatically prevents the saw blade from moving in the
vertical direction relative to the table when [a] the second
sensor detects the saw blade moving in the horizontal
direction and automatically permits the saw blade to move in

the vertical direction after the second sensor detects the saw blade has stopped moving in the horizontal direction.

19. (Reiterated) An apparatus as in claim 18 wherein the apparatus comprises both said first lock and said second lock.

20. (Cancelled by previous amendment)

21. (Twice Amended) An apparatus as in claim 19, further comprising:

a first actuator coupled to the first lock and first sensor and

a second actuator coupled to the second lock and the second sensor, wherein the first and second actuators convert electric signals generated by the sensors into mechanical energy to [engage] actuate the first and second locks, respectively.

22. (Thrice Amended) An apparatus as in claim 21, further comprising:

a support arm mounted on the table [and coupled to the saw blade],

a slide shaft coupled to the support arm, wherein the slide shaft [slides] is arranged and constructed to slide

horizontally relative to the support arm and
a vertically pivotable hinge coupling [said saw blade]
the saw unit to the slide shaft, wherein:

when the first sensor detects vertical pivotal movement
of the saw blade relative to the slide shaft, [and] the first
lock [selectably] fixes the slide shaft in a position relative
to the support arm [in response to detection of vertical
pivotal movement] and

when the second sensor detects horizontal movement of the
saw blade relative to the support arm, [and] the second lock
[selectably] fixes the saw blade in a position relative to the
slide shaft [in response to detection of horizontal movement].

23. (Thrice Amended) An apparatus as in claim 22
wherein:

the slide shaft is slidably received in a holder
connected to the support arm,

the first lock comprises a first screw inserted into a
first threaded hole formed in the holder in a direction
perpendicular to [an axial direction] a longitudinal axis of
the slide shaft, [the first screw having one end abutting] one
end of the first screw being arranged and constructed to abut
the slide shaft, wherein the first screw is coupled to the
first actuator and the first actuator [rotates] is arranged
and constructed to rotate the first screw in both clockwise

and counterclockwise directions so as to move the first screw toward and away from the slide shaft,

the second lock comprises a second screw inserted into a second threaded hole formed in the saw unit in a direction parallel to the vertical pivotal axis of the apparatus,

and wherein the apparatus further comprises a flange portion having an abutting surface extending within a plane perpendicular to the vertical pivotal axis of the saw blade, [and is disposed such that] one end of the second screw [selectively abuts] being arranged and constructed to abut the abutting surface of the flange portion, [and] wherein the second screw is coupled to the second actuator and the second actuator [rotates] is arranged and constructed to rotate the second screw in both clockwise and counterclockwise directions so as to move the second screw toward and away from the abutting surface.

24. (Amended) An apparatus as in claim 23 further comprising:

a first dust cover [mounted on the holder so as to cover the first actuator and the first screw, whereby] protecting the first actuator and the first screw [are protected] from the outside environment and

a second dust cover [disposed over the saw blade so as to cover the second actuator and the second screw, whereby]

protecting the second actuator and the second screw [are protected] from the outside environment.

25. (Thrice Amended) An apparatus as in claim 24 further comprising:

a first detector plate mounted on either the slide shaft or the support arm, wherein the first sensor includes a first optical sensor mounted on the other of the slide shaft and the support arm, the first detector plate having a plurality of first parallel identification bars that are spaced from each other by predetermined distances, and the first sensor is disposed in relation to the first detector plate such that the first sensor detects movement of the first parallel identification bars as a change in a reflected light pattern and

a plurality of second parallel identification bars marked on the slide shaft, wherein the second sensor includes a second optical sensor coupled to the holder, the second parallel identification bars are spaced from each other by predetermined distances in [a] the longitudinal [direction] axis of the slide shaft and the second optical sensor is disposed in relation to the second parallel identification bars such that the second sensor detects movement of the second parallel identification bars as a change in a reflected light pattern.

26. (Twice Amended) An apparatus comprising:

a table having a surface for placing a workpiece thereon,

a saw unit having a saw blade,

a first means [for axially displacing the saw relative to the table, wherein the first means enables] enabling the saw unit to move in a horizontal plane that is parallel to the surface of the table, the first means being [and is] coupled to the table and the saw unit,

a second means [for vertically pivoting the saw relative to the table, wherein the second means enables] enabling the saw unit to move in a vertical plane relative to the surface of the table, the second means being [and is] coupled to the table and the saw unit,

a first lock coupled to the first means, wherein the first lock automatically prevents horizontal movement of the saw unit upon detection by a first sensor of the saw unit pivotally moving in the vertical plane and

a second lock coupled to the second means, wherein the second lock automatically prevents vertical pivotal movement of the saw unit upon detection by a second sensor of the saw unit moving in the horizontal plane.

27. (Twice Amended) An apparatus as in claim 26, wherein the first lock comprises a first screw, wherein the first

screw fixes the saw unit in position relative to the table in the horizontal plane when the first screw engages the first means.

28. (Twice Amended) An apparatus as in claim 27 further comprising:

a first actuator coupled to the first sensor and the first screw, wherein the first actuator rotates the first screw in response to detection by the first sensor of pivotal movement of the saw unit in the vertical plane.

29. (Twice Amended) An apparatus as in claim 28, wherein the second lock comprises a second screw, wherein the second screw fixes the saw unit in position relative to the table in the vertical plane when the second screw engages the second means.

Please cancel claims 30-32 without prejudice.

33. (Amended) An apparatus comprising:

a table;

a saw coupled to the table, the saw being movable at least in a horizontal direction relative to the table and a vertical direction relative to the table;

a sensor[, wherein the sensor detects] disposed in a position to detect movement of the saw in the vertical direction relative to the table and

a [first] lock coupled to the sensor, wherein the [first] lock automatically prevents horizontal movement of the saw upon detection by the [first] sensor of the saw [pivotally] moving in the vertical direction relative to the table.

34. (Amended) An apparatus comprising:

a table;

a saw coupled to the table, the saw being movable at least in a horizontal direction relative to the table and a vertical direction relative to the table;

a sensor[, wherein the sensor detects] disposed in a position to detect movement of the saw in the horizontal direction relative to the table and

a [first] lock coupled to the sensor, wherein the [first] lock automatically prevents vertical movement of the saw upon detection by the [first] sensor of the saw moving in the horizontal direction relative to the table.

Please add the following new claims:

35. (New) An apparatus comprising:

means for supporting a workpiece,

means for cutting the workpiece,

means for enabling the cutting means to move in a plane that is parallel to the workpiece supporting means,

means for enabling the cutting means to move towards and away from the workpiece supporting means,

means for sensing movement of the cutting means towards the workpiece supporting means and

means for automatically preventing the cutting means from moving in the plane parallel to the workpiece supporting means upon detection by the sensor means of the cutting means moving towards the workpiece supporting means.

36. (New) An apparatus as in claim 35, further comprising:

means for sensing movement of the cutting means in the plane parallel to the workpiece supporting means and

means for automatically preventing the cutting means from moving towards the table surface upon detection by the sensing means of the cutting means moving in the plane parallel to the workpiece supporting means.

37. (New) An apparatus as in claim 35, wherein said enabling means further comprising means for enabling the cutting means to laterally pivot relative to the workpiece

supporting means so as to permit bevel cutting operations.

38. (New) An apparatus comprising:

means for supporting a workpiece,

means for cutting the workpiece,

means for enabling the cutting means to move in a plane that is parallel to the workpiece supporting means,

means for enabling the cutting means to move towards and away from the workpiece supporting means,

means for sensing movement of the cutting means in the plane parallel to the workpiece supporting means and

means for automatically preventing the cutting means from moving towards the workpiece supporting means upon detection by the sensing means of the cutting means moving in the plane parallel to the workpiece supporting means.

39. (New) An apparatus as in claim 38, wherein said enabling means further comprising means for permitting the cutting means to laterally pivot relative to the workpiece supporting means so as to permit bevel cutting operations.

40. (New) An apparatus comprising:

a table having a surface for supporting a workpiece,

a saw coupled to the table, the saw being movable at least in a direction parallel to the table surface and movable

towards and away from the table surface,

a sensor detecting pivotal movement of the saw towards the table surface and

a lock in communication with the sensor, wherein the lock automatically prevents movement of the saw parallel to the table surface upon detection by the sensor of the saw pivotally moving towards the table surface.

41. (New) An apparatus as in claim 40, further comprising:

a support arm coupled to the table,

a holder connected to the support arm,

a shaft slidably received within the holder and

a hinge coupling the holder to the saw, the hinge permitting movement of the saw towards and away from the table surface.

42. (New) An apparatus as in claim 41, further comprising a screw threadably engaged within the holder and a solenoid in communication with the sensor and coupled to the screw, wherein the solenoid rotates the screw to engage the shaft upon detection by the sensor of the saw moving towards the table surface, whereby movement of the saw parallel to the table surface is prevented.

43. (New) An apparatus as in claim 42, further comprising a lateral pivot mechanism coupled to the support arm, the lateral pivot mechanism enabling the saw to be inclined relative to the table surface for bevel cutting operations.

44. (New) An apparatus comprising:

a table having a surface for supporting a workpiece,

a saw coupled to the table, the saw being movable at least in a direction parallel to the table surface and movable towards and away from the table surface,

a sensor detecting movement of the saw parallel to the table surface and

a lock in communication with the sensor, wherein the lock automatically prevents movement of the saw towards the table surface upon detection by the sensor of the saw moving in parallel to the table surface.

45. (New) An apparatus as in claim 44, further comprising:

a support arm coupled to the table,

a holder connected to the support arm,

a shaft slidably received within the holder and

a hinge coupling the holder to the saw, the hinge permitting vertical pivotal movement of the saw towards and

away from the table surface.

46. (New) An apparatus as in claim 45, further comprising a screw arranged and constructed to the hinge and a solenoid in communication with the sensor and coupled to the screw, wherein the solenoid rotates the screw to engage the hinge upon detection by the sensor of the saw moving parallel to the table surface, whereby movement of the saw towards the table surface is prevented.

47. (New) An apparatus as in claim 46, further comprising a lateral pivot mechanism coupled to the support arm, the lateral pivot mechanism enabling the saw to be inclined relative to the table surface for bevel cutting operations.

48. (New) An apparatus comprising:
a table having a surface arranged and constructed to support a workpiece,
a saw unit having a saw blade,
a support arm coupled to the table,
a holder connected to the support arm,
a shaft slidably received within the holder, whereby the saw unit can move in parallel to the table surface and

a hinge coupling the shaft to the saw unit, the hinge permitting the saw unit to move towards and away from the table surface,

a first sensor detecting movement of the saw unit parallel to the table surface,

a second sensor detecting movement of the saw unit towards the table surface,

a first lock in communication with the first sensor, wherein the first lock automatically prevents movement of the saw unit towards the table surface without operator assistance upon detection by the first sensor of the saw unit moving parallel to the table surface and

a second lock in communication with the second sensor, wherein the second lock automatically prevents movement of the saw unit parallel the table surface without operator assistance upon detection by the second sensor of the saw moving towards the table surface.

49. (New) An apparatus as in claim 48, further comprising a screw threadably engaged within the holder and a solenoid in communication with the sensor and coupled to the screw, wherein the solenoid rotates the screw to engage the shaft upon detection by the sensor of the saw moving towards the table surface, whereby movement of the saw parallel to the table surface is prevented.

50. (New) An apparatus as in claim 49, further comprising a lateral pivot mechanism coupled to the support arm, the lateral pivot mechanism enabling the saw to be inclined relative to the table surface for bevel cutting operations.

51. (New) A method of cutting a workpiece using a saw comprising a table having a surface, a saw blade pivotally coupled to the table, a sensor and a lock, the method comprising:

detecting movement of the saw blade in a plane parallel to the table surface by the sensor and

communicating the detection by the sensor of the parallel movement to the lock, wherein the lock prevents movement of the saw blade towards the table surface.

52. (New) A method of cutting a workpiece using a saw comprising a table having a surface, a saw blade pivotally coupled to the table, a sensor and a lock, the method comprising:

detecting movement of the saw blade towards the table surface by the sensor and

communicating the detection by the sensor of the movement towards the table surface to the lock, wherein the lock